

SUMMARY

The specification of the subject U.S. patent application, as filed, as constituted by the verified translation of WO 2004/020201 A1, has been cancelled in favor of the concurrently submitted Substitute Specification. A suitable Abstract of the Disclosure has been presented. These changes and additions do not constitute any new matter.

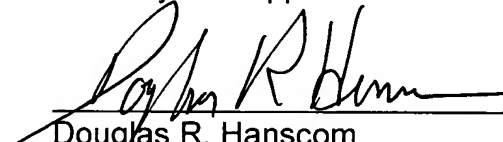
Original claims 1-26 have been cancelled. New claims 27-52 have been filed. New claims 27- 52 are essentially the same, in scope, as the claims currently pending in the corresponding PCT application. They have been rewritten more in a form in accordance with U.S. practice and eliminating multiple dependencies.

Entry of this Preliminary Amendment into the file of the subject U.S. patent application, prior to an examination of the application on the merits, and prior to the calculation of the filing fee, is respectfully requested.

Respectfully submitted,

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ABSTRACT OF THE DISCLOSURE

A packing or dressing is mounted on a cylinder of a rotary printing press. A dressing suspension leg, situated at an end of the dressing extending in the production direction of rotation of the cylinder, is positioned in an opening in the surface of the cylinder. That suspension leg is retained in the cylinder opening predominantly by its own weight.

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[PCT/DE2003/002634]

[Specification]

MARKED-UP COPY OF SPECIFICATION

ZINK: W1.1902 PCT-US

**METHOD AND DEVICE FOR MOUNTING DRESSINGS[PACKING] ONTO THE
CYLINDER OF A PRINTING PRESS**

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This U.S. patent application is the U.S. national phase, under 35 USC 371,
of PCT/DE2003/002634, filed August 6, 2003; published as WO 2004/020201 A1
on March 11, 2004, and claiming priority to DE 102 38 106.2, filed August 21,
2002, the disclosures of which are expressly incorporated herein by reference.

FIELD OF THE INVENTION

[002] The present invention is directed[relates] to methods and to a device for
mounting a dressing on a cylinder of a printing press [in accordance with the
preambles of claims 1, 13, 22 or 26]. A suspension leg on a plate or dressing end
is held in a cylinder opening primarily by its own weight.

BACKGROUND OF THE INVENTION

[003] A method and an arrangement for the automatic feeding of a printing plate to a plate cylinder, or for the removal from a plate cylinder of a rotary printing press is known from DE 39 40 795 A1. That[The] method for the automatic feeding of a printing plate to a plate cylinder of a rotary printing press, in which[wherein] the plate cylinder has, inter alia, assemblies[means] for clamping and for bracing or tensioning the printing plate, provides for the printing plate to be placed into a storage chamber of printing plate feeding or removal device. The[, the] plate cylinder is rotated into a plate feeding position, and the printing plate is conducted to a clamping device of the plate cylinder by the use[means] of a number of transport rollers. The above-identified method for the automatic removal of a printing plate from a plate cylinder of a rotary printing press, in which[wherein] the plate cylinder has, inter alia, assemblies[means] for unclamping and releasing the printing plate, is distinguished in that the plate cylinder is initially rotated forward into a printing plate release position. A[, that a] clamping flap for grasping a printing plate leading end is then opened The[, that

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the] plate cylinder then rotates backward, and[that] a clamping flap for grasping a printing plate starting end is opened. The[, and that the] printing plate is then conducted to a storage chamber of a printing plate feeding or removal device by the use[means] of a number of transport rollers. The device for performing the above-described method has at least one transport roller embodied as a drive roller and one embodied as a pressing roller, and wherein the pressing roller can be placed against the drive roller. In addition, various actuating devices[means], a pivotably seated pressing roller for pressing the printing plate against the plate cylinder, as well as ejection fingers, can be provided. The[, wherein the] ejection fingers can have tips, which are arranged so that they can be pivoted into the periphery of the plate cylinder. Also, the storage chamber of the printing plate feeding or removal device can be seated, pivotable around a joint.

[004] DE 39 40 796 A1 describes an arrangement for automatically changing a printing plate on a plate cylinder of a rotary printing press. The[, wherein the] plate cylinder has, inter alia, devices[means] for clamping and for bracing the printing plate. The[, wherein the] printing plate changing arrangement has at least two

storage chambers. A[, so that a] printing plate released from the plate cylinder can be conducted into a storage chamber by [means of]transport rollers, while a printing plate stored in the other storage chamber is fed to a clamping device of the plate cylinder by [means of]transport rollers.

[005] EP 1 084 837 A1 describes a device for holding and conveying a printing forme. This[Here, this] device has translatory conveying arrangements, which convey a printing forme to be mounted on a forme cylinder, or a printing forme to be removed from a forme cylinder. For[While, for] changing a printing forme, the device is tilted around an axis of rotation out of its position of rest into its operating position. A[, a] hook is pivoted, merely under its own weight, into the space in which the printing forme is stored and secures the printing forme at its trailing beveled end to prevent it from[against] inadvertently falling out of this space.

[006] EP 0 734 859 A1 describes an arrangement for changing printing formes. For[, wherein, for] changing printing formes, a printing forme loading unit pivots out of a vertical position of rest against a holding element, which is embodied as a gripper. For mounting printing formes, the holding element grasps a fresh printing

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forme kept ready in the printing forme loading unit and performs, together with the grasped printing forme, a pivot movement by the use[means]of an actuated lift cylinder. In this way₁ the printing forme, which is seated straight in a printing forme supply compartment, is lifted by its front area by the pivoting movement of the holding element, so that[wherein] the leading end of the printing forme hangs down. The curved printing forme grasped by the holding element is pivoted by the holding element₁ with its leading end against a forme cylinder₁ in such a way that a suspension leg, which is formed at the leading end of the printing forme₁ can drop[dip] into a channel that is formed in the forme cylinder, which channel has a proportionally large opening width in comparison with the diameter of the forme cylinder.

[007] A pivotable printing forme changing arrangement is known from DE 199 34 271 A1. A[, wherein a] printing forme, which is fixed in place on a printing forme table by a contact body by [means of]frictional contact₁ is placed against a printing forme cylinder by a pivoting movement of the printing forme table. An[in such a way that an] end of the printing forme₁ projecting past the printing forme

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table₁ is deformed when an edge formed at the end of the printing forme is placed against the printing forme cylinder. The[, and that the] end, which has been prestressed in this way₁ snaps into a bracing groove of the printing forme cylinder when the printing forme cylinder is slowly rotated. In the course of this procedure, no relative movement takes place between the printing forme resting on the printing table and the contact body.

[008] An arrangement for changing printing formes of[at] rotary printing presses is known from EP 0 678 383 A1. Pivotable[, wherein pivotable] holding elements[means], which can be charged with a vacuum₁ pull a leading end of a printing forme to be mounted on a forme cylinder to the forme cylinder and place this end, which is elastically deformed, against the forme cylinder. In the course of [a]rotation of the forme cylinder₁ a beveled edge at the leading end of the printing forme snaps into an opening in the cylinder. A[, wherein the] force need for this snapping in of the front edge of the printing forme is supplied by the holding elements[means].

[009] A device for exchanging printing formes of[at] rotary printing presses is

known from EP 0 678 382 A1. Holding elements[, wherein holding means], which can be charged with a vacuum, place a leading end of a printing forme to be mounted on a forme cylinder against the forme cylinder by exerting a[an] contact pressure, because of which contact pressure this end is deformed. The contact pressure causes a beveled edge at the leading end of the printing forme, which beveled edge is prestressed in this manner, to snap into an opening of the cylinder while the latter rotates.

[010] A device for changing printing formes is known from EP 0 734 860 A1. Pivotable[, wherein pivotable] holding devices[means], which preferably can be charged with a vacuum, place a leading end of a printing forme to be mounted on the forme cylinder against the forme cylinder, because of which placement this end is elastically deformed.

[011] Devices[Device] for changing printing formes are known from both EP 1 155 840 A2 and JP 2000-094 640 AA. A[, wherein a] beveled edge, located at the leading end of a printing forme to be mounted on a forme cylinder, after this beveled end[it] has been placed against the forme cylinder, is pressed into an

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opening in the cylinder by a rolling element. With the device in accordance with EP 1 155 840 A2, the printing forme to be mounted is conveyed out of a magazine by [means of]a thrusting force acting on the trailing end of this printing forme and is placed against the forme cylinder by making use of the elasticity of the printing forme. With the device in accordance with JP 2000-094 640 AA, the beveled edge at the leading end of the printing forme to be mounted₁ is placed against the lower half of the forme cylinder and is pushed₁ counter to the force of gravity₁ into the opening of the cylinder.

[012] A method and a device for mounting a flexible printing forme is known from DE 44 47 088 C1. A[, wherein a] feed carriage, which can be moved radially and axially in front of the cylinder and which has an insertion slider for mounting a suspension leg at the trailing end of the printing forme can be fixed in place in a defined position in relation to the cylinder by [means of]a preferably conical snap-in bolt. This bolt[,] which engages an opening of the cylinder, is radially movable, but is otherwise fixed on the frame.

[013] A device for positioning a magazine, which is used for automatic printing

plate changing, is known from DE 42 24 832 C2. The, wherein the] vertical adjustability of the magazine in the plate changing position is fixed in place by [means of]a bolt.

[014] A displaceable suspension for a protective printing group device is known from DE 198 03 726 A1. The, wherein the] protective printing group device has displaceable[y] bolts and a device actuating the bolts. For, wherein for] arresting the protective printing group device in place, the bolts are introduced into lateral frame walls of a printing group.

SUMMARY OF THE INVENTION

[015] The object of the present invention is directed to providing[based on creating] methods and a device for mounting a dressing on a cylinder of a printing press.

[016] In accordance with the present invention, this object is attained by providing a dressing having a beveled leading end suspension leg with an opening angle.
The dressing is moved to the cylinder until the suspension leg rests on the

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cylinder at a contact point. The suspension leg then falls into an opening on the cylinder surface, without the suspension leg being elastically prestressed. The suspension leg enters the opening under the force of its own weight as soon as the distance between the opening and the contact point is zero. The dressing is brought to the cylinder from a chute in which it had been laterally properly positioned. A conveying device in the chute is used to drive a movable support on which the dressing rests. A connecting line supplies power to all of the units in the chute[means of the characteristics of claims 1, 13, 22 or 26].

[017] The advantage to be gained by [means of]the present invention consists, in particular, in that dressings on a cylinder can be dependably changed with the least possible outlay for apparatus. In one embodiment of the present invention, the change takes place without the use of a pressing element, because of which a particularly simple structural set-up becomes possible. Because the printing formes are placed in a defined position, in relation to the printing forme magazine, prior to the feeding in of a printing forme, no assembly[means] for use in aligning the printing forme to be mounted is[are] required at the forme cylinder itself. The

printing forme is conducted into its desired position for mounting on the forme cylinder by the use[means] of a structurally simple carriage, on which carriage the printing forme rests merely because of its weight. The [as]simple [as possible]and unhampered mobility of the printing forme magazine, to be positioned in front of the forme cylinder, is advantageously provided by a connecting element, which combines all of the required connecting lines in a bundle.

BRIEF DESCRIPTION OF THE DRAWINGS

[018] Preferred[Exemplary] embodiments of the present invention are represented in the drawings and will be described in greater detail in what follows.

[019] Shown are in:

Fig. 1, a perspective representation of a dressing, in

Fig. 2, a simplified cross-sectional representation of a holding device for a dressing to be mounted on a cylinder, in

Fig. 3, dressings which are brought tangentially against the cylinder, and on which a radial force acts during their being mounted, in

Fig. 4, elastically prestressed dressings in the course of their being mounted on a cylinder, in

Fig. 5, a 4-cylinder printing press with horizontal paper guidance and with printing forme magazines, in

Fig. 6, a printing forme magazine with a conveying device for a used printing forme, in

Fig. 7, a printing forme magazine with an inclined lifting device for conveying a fresh printing forme, in

Fig. 8, a device in a printing forme magazine for aligning a fresh printing forme with[in] respect to a forme cylinder, in

Fig. 9, a printing forme, whose leading end rests on a forme cylinder in the course of the printing forme being mounted, in

Fig. 10, a printing forme magazine with a fresh printing forme, which fresh printing forme rests with its print side on a support, in

Fig. 11, a printing forme magazine with a conveying device for a used printing forme, in

Fig. 12, a cross-sectional[partially sectional] representation of a printing forme magazine with a friction body placed against a printing forme, and in

Fig. 13, a friction body guided in a channel, and in which[wherein] the channel is provided with cutouts.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[020] Referring initially to Fig. 1,[A] dressing 01[(Fig. 1)], which is configured[designed] as a plate-shaped printing forme 01, or as a support plate supporting a printing blanket, has a substantially rectangular surface of a length L and a width B. The[, wherein the] length L can assume, for example, a measured values between 400 mm and 1300 mm, and the width B has a measured values, for example, between 280 mm and 1500 mm. The generally rectangular surface has a support side, called support side or surface 02 in what follows, with which support side or surface 02, in the dressing mounted state, the dressing 01 rests on a surface area 07 of a cylinder 06, as seen in [(Fig. 2)]. The back or inverse of the support surface 02 is a work surface which, in the case in which[wherein]

the dressing 01 is embodied as a printing forme 01, is provided with a printing image, or which can at least be provided with a printing image. The dressing 01 has two oppositely located ends 03, 04, which delimit the support surface 02. Angled or beveled[, and wherein the] suspension legs 13, 14 extend from dressing ends 03, 04 respectively, and each such leg 13, 14 [each]preferably extends entirely, or at least partially, over the width of the dressing 01. The support surface 02 of the dressing is flexible at least along the length L and can be matched to the curvature of the surface 07 of a cylinder 06, as seen in Fig. 2, [(Fig. 2)] when the dressing 01 is being fastened on a surface area 07 of a cylinder 06 of a printing press. In the mounted state of the printing forme, the length L of the support surface 02 thus extends in a[the] direction of the circumference of the cylinder 06, while the width B of the support surface 02 extends in the axial direction of the cylinder 06. In actual use, the measurement of the width B of dressing 01, in particular, varies within defined predetermined tolerance limits, since the original width B of the dressing 01 is typically reduced by effecting a trimming of at least one of the longitudinal sides of the dressing 01.

This trimming may be done, for example, for adjusting a[the] position of a printing image on the working surface of the dressing 01 to a defined distance

measurement with[in] respect to at least one of the long sides of the dressing 01.

Here, the tolerance limits lie, for example, within a[the] range between[of] fractions of a millimeter and up to a few millimeters. Thus, the width B of the dressing 01 can differ from other identical dressings 01 used on the same cylinder 06 within the permissible tolerance limits.

[021] As represented in Fig. 2, the suspension legs 13, 14 of the dressing 01 are fastened by the provision[means] of a holding device. Such a[, wherein the] holding device is conventionally arranged in a channel 08, and wherein, as a rule, the channel 08 extends in a[the] axial direction in relation to the cylinder 06. An end 03 of the dressing 01, which end 03 is aligned in the production direction P of the cylinder 06, is called its leading end 03, while the oppositely located end 04 is referred to as the trailing end 04 of the dressing 01. At least the ends 03, 04 of the dressing 01, with the suspension legs 13, 14 formed thereon, consist of a rigid, such as a[for example] metallic material, and particularly, for example, of an

aluminum alloy. A[The] thickness D of the material of the dressing 01, as seen in [(]Fig. 1[)], or the thickness D of at least the suspension legs 13, 14 is customarily [is]a few tenths of a millimeter, for example is 0.2 mm to 0.4 mm, and preferably is 0.3 mm. Thus, the dressing 01, as a whole, or at least its ends 03, 04, consists of a dimensionally stable material. The[, so that the] ends 03, 04 of dressing 01 can be permanently deformed by bending against a material-specific resistance.

[022] A beveled suspension leg 13[, or 14 [each]is formed on at least one end 03 of the dressing 01, as seen in [(]Fig. 1. Preferably, such beveled suspension legs 13, 14 are formed[)], but preferably] on both dressing ends 03, 04, each along a bent edge 11, 12, respectively. The[wherein the] suspension legs 13, 14 can each be inserted into a narrow opening 09, which, in particular, is embodied in a slit shape, of the channel 08 of the cylinder 06, again as seen in [(]Fig. 2. The suspension legs[)], and] can each be fastened in opening 09,[there] by, for example use [means]of a holding device. For example, in relation to the length L of the not arched flat support surface 02 of the not mounted dressing 01, a suspension leg 13 at the bending edge 11 at the leading end 03 of the dressing is

beveled at an opening angle α_1 . The trailing[, or at the] end 04 of dressing 01 has
a suspension leg 14 which is beveled at an opening angle β_1 , all as seen in [(]Fig.
1. The[], wherein the] opening angles α_1 , β_1 , as a rule, lie between 30° and 140° .
If the opening angle α_1 is assigned to the leading end 03 of the dressing 01, it is
preferably configured[designed] as an acute angle. In[, in] particular, it is 45° . The
opening angle β_1 at the trailing end 04 of the dressing 01 is often
configured[designed] to be greater than[as] 80° , or as an obtuse angle. In[, in]
particular, it is between 85° and 135° . The beveled suspension leg 13 at the
leading end 03 of dressing 01 has a length l_{13} , which, for example, lies in the
range between 4 mm and 30 mm, and in particular is between 4 mm and 15 mm.
The beveled suspension leg 14 at the trailing end 04 of dressing 01 has a length
 l_{14} , which is between 4 mm and 30 mm, for example, and in particular is between
8 mm and 12 mm. A[], wherein the] shorter length is rather preferred in order to
assure as simple as possible a removal of the suspension legs 13, 14 from the
opening 09 of the channel 08.

[023] Fig. 2 shows, in a simplified sectional representation, a cylinder 06 with a

surface area 07 and with a channel 08, which channel 08 has a narrow, slit-shaped opening 09 of a slit width S facing toward the surface area 07, wherein the slit width S is less than 5 mm and preferably lies within the range of 1 mm to 3 mm. In the production direction P of the cylinder 06, the opening 09 has an opening[a] front edge 16 and an opening[a] rear edge 17. An acute opening angle α_2 , which lies between 30° and 50° , and is preferably 45° , is formed between an opening[the] wall 18 extending from the opening front edge 16 in the direction toward the channel 08, and an imagined tangential line T1 resting on the opening 09 in the surface area 07 of the cylinder 06. Thus, the beveled suspension leg 13 at the leading end 03 of the dressing 01 can be suspended on this front edge 16 of the opening 09, preferably positively connected, because the opening angle α_1 at the leading end 03 of the dressing 01 is preferably matched to the opening angle α_2 of the leading opening wall. Conditions are the same at the trailing end 04 of the dressing 01. Between the wall 19 extending from the rear edge 17 in the direction toward the channel 08, and an imagined tangential line T1 resting on the opening 09 in the surface area 07 of the cylinder 06, an opening angle β_2 has

been formed, which opening angle β_2 lies either between 80° and 95°, and is[or] preferably 90°, or lies between 120° and 150°, and is preferably 135°. Thus, the beveled suspension leg 14 at the trailing end 04 of the dressing 01 can be suspended on this rear edge 17 of the opening 09, preferably positively connected, because the opening angle β_1 at the trailing end 04 of the dressing 01 is at least approximately matched to the opening angle β_2 at the opening trailing wall 19.

[024] A preferably pivotably seated dressing end holding member[means] 21 and a preferably prestressed spring element 22, for example, are arranged in the channel 08. The[, wherein the] spring element 22 presses the holding member[element] 21 against, for example, [against]the beveled suspension leg 14 at the trailing end 04, which trailing end beveled suspension leg 14 is suspended at the rear edge 17 of the opening 09. The[, because of which the] suspension leg 14 at the trailing end 04 of dressing 01 is maintained at the wall 19 extending from the rear edge 17 in the direction toward the channel 08. For use in releasing the pressure exerted by the holding member[means] 21, an actuating

device[means] 23 is provided in the channel 08 which actuating device 23, when actuated, pivots the holding member[means] 21 against the force of the spring element 22. Thus, the holding device substantially consists of the holding member[means] 21, the spring element 22 and the actuating device[means] 23.

[025] The cylinder 06, which has hereinabove been described by way of example, can be structured[designed] in such a way that [also] several, preferably identical dressings 01 can be arranged on its surface area 07. If the cylinder 06 is configured[designed] as a forme cylinder, it can be covered, in its axial direction, [for example] with, for example, six side-by-side arranged plate-shaped printing formes 01. It can also be provided that more than one dressing 01 which can be applied to the cylinder 06 in the direction of its circumference. For example, two channels 08, each extending axially with[in] respect to the cylinder 06 and each having associated openings 09, can be provided, which two channels 08 are arranged, offset by 180° with[in] respect to each other, on the circumference of the cylinder 06. With this coverage of the cylinder 06 by two dressings 01 which are arranged one behind the other along the cylinder's[its] circumference, a

suspension leading leg 13 of a[the] leading end 03 of [the]one dressing 01 is fastened in the first[one] channel 08, while a suspension trailing leg 14 of a[the] trailing end 04 of the same dressing 01 is fastened in the other channel 08. This [applies]correspondingly applies to the remaining dressing, or dressings,[(s)] 01 arranged on this cylinder 06. Also, the dressings 01, which may be arranged side-by-side in the axial direction of the cylinder 06, can be arranged offset with[in] respect to each other, for example individually or in groups each by one-half the length L of the dressing 01. This[which], however, requires that further channels 08 with associated openings 09, or at least partial lengths[pieces] thereof, have been cut into the cylinder 06 and are arranged, for example offset by 90° with[in] respect to the two previously mentioned channels 08 and openings 09, along the circumference of the cylinder 06.

[026] A method for mounting a flexible dressing 01 on a cylinder 06 of a printing press, in accordance with the present invention, will be described in what follows. The[, wherein the] dressing has a leading end 03 and a trailing end 04 in relation to the production direction P of the cylinder 06, as seen in [(Fig. 3)]. A

suspension leg 13 is formed at least at the leading end 03 of the dressing 01.
This[, wherein this] suspension leg 13 is beveled at an opening angle α_1 of maximally 90° , and preferably of 45° , with[in] respect to the extended length L of the dressing 01. At least one, preferably slit- shaped opening 09 with a first edge 16 and with a second edge 17, in the production direction P of the cylinder 06, is provided in the cylinder 06. These[, wherein the] edges 16, 17 preferably extend parallel with each other in the axial direction of the cylinder 06. The method in accordance with the present invention is distinguished because[in that] the leading end 03 of the dressing 01 is fed, preferably tangentially, in the cylinder's[its] production direction P, to the cylinder 06 preferably by the use[means] of a pushing force that is preferably acting at the trailing end 04 of the dressing 01.
The[, and the] suspension leg 13 at the dressing leading edge 03[33] is placed against the cylinder 06 behind the second, trailing edge 17 of the opening 09, so that, in the course of a rotation of the cylinder 06 in its production direction P, the suspension leg 13 formed at the dressing leading edge 03 extends into the opening 09, as a result of a radial force RF acting on the leading end 03, and

directed toward the cylinder 06. Suspension leading leg 13[, and] is hooked on the first edge 16 [by]preferably by being positively connected there. The pushing force used for conveying the dressing 01 is advantageously a force acting in the plane of the dressing 01 in the mounting direction M of the latter.

[027] In the case where the dressing 01 rests₁ with its suspension leg 13 formed on the leading end 03₁ on the surface area 07 on the cylinder 06, and supporting itself thereon, the radial force RF can be the force FG of the weight of the dressing 01 acting on the surface area 07 of the cylinder 06. In this case₁ it is advantageous to conduct the dressing 01 straight over its extended length L, or at least without a bend oriented toward the cylinder 06, to the upper half of the surface area 07 of the cylinder 06 and to place the suspension leg 13 at the leading end 03 on a contact point 27 of the surface area 07 of the cylinder 06, as seen in [(]Fig. 3[)]. As soon as the dressing leading end suspension leg 13 and the opening 09 of the cylinder 06 are located opposite each other₁ because a spacing a09 between the opening 09 and the contact point 27 is canceled, i.e. is reduced to zero by [means of]a relative movement between the opening 09 and

the contact point 27 in the circumferential direction, the suspension leg 13 at the leading end 03 of the dressing 01 falls, primarily[mostly, i.e.] with a proportion of over 70% of the sum of all forces acting on the suspension leg 13, and dependably into the opening 09 of the cylinder 06 because of the force FG of its weight acting on the leading end 03. This is accomplished[.] without requiring a prestressing of the leading end 03 of the dressing 01 by making use of the elasticity of the dressing 01, and without the use of[or] further aids, such as a rolling element.

[028] In addition to the use of the force FG of the weight of the dressing 01, or as an[alternatively] to it, the leading end 03 of dressing 01 can be simply prestressed[s], as shown in [(Fig. 04)], so that the suspension leg 13, formed at the leading end 03 of the dressing 01, springs into the opening 09 because of a restoring moment RM directed toward the cylinder 06. This occurs as soon as the opening 09 of the cylinder 06, and the contact line 27 of the suspension leg 13 with the surface area 07 of the cylinder 06, are located directly opposite each other as a result[because] of a relative movement between the dressing 01 and

the cylinder 06, which relative movement takes place₁ in particular₁ by [means of the] rotation of the cylinder 06 in the production direction P.

[029] The restoring moment RM results from the fact that the dressing 01 consists of an elastically deformable material and therefore inherently has an elastically resilient property. This[, wherein this] property can be utilized because, in the course of bringing the leading end 03 of the dressing 01 to the cylinder 06, the dressing 01[it] is conducted, for example, over an[d] edge 26 of a support element 24, which support element 24 is preferably extending in the axial direction of the cylinder 06 and is spaced apart from the cylinder 06. Dressing 01[, and] is bent there in such a way that a bending stress with a spring force directed toward the cylinder 06, shown in the [(dashed line representation of the dressing 01 in Fig. 4)]₁ is built up at the leading end 03 of the dressing 01. At least until the leading end 03 of the dressing 01, which is conducted over the edge 26 of the support element 24, rests on the surface area 07 of the cylinder 06, the dressing 01 is fed₁ with force exerted on its trailing end 04₁ from a spatial direction which is fixed with[in] respect to the cylinder 06. In this way₁ the dressing 01 is stabilized

during the mounting process along[by] its contact line 27 of its suspension leg 13, attached to the leading end 03, with the surface area 07 of the cylinder 06, as well as by its support on the edge 26 of the support element 24 and by a positional fixation of the dressing trailing end 04. The support element 24 can be a rolling element 24, for example, which can be placed against the cylinder 06, for example. In this case, the support element 24 is preferably arranged close to the cylinder 06. However, it is also possible to provide, in addition to the support element 24, a further rolling element 47 or 62, such as is seen in [(Fig. 6 or 9)], and which will be discussed later, wherein the support element 24 can be arranged at a different position and need not be capable of being placed against the cylinder 06. For example, in this case shown in Fig. 4, the purpose of the support element 24 can be limited to generating a bending stress in the dressing 01.

[030] The leading end 03 of the dressing 01 can also be brought toward the cylinder 06 in such a way that, after its contact with the surface area 07 of the cylinder 06, this leading end 03 faces away from the surface area 07 of the

cylinder 06 at an acute angle γ [gamma] with respect to an imagined second contact line T2 resting at a contact point 29 on the surface area 07 of the cylinder 06 referring, in this context to the [(\square)representation of the dressing 01 by a solid line in Fig. 4[\square]]. However, the bending of the leading end 03 of the dressing 01 should only be forceful[strong] enough so that the suspension leg 13 formed at leading end 03[there] still rests securely against the surface area 07 of the cylinder 06. For aiding the secure resting of the suspension leg 13 against the surface area 07 of the cylinder 06 it is possible, for example, to place the support element 24 against the dressing 01, because of which placement, the leading end 03 of the dressing 01 is maintained close to the surface area 07 of the cylinder 06.

[031] In the course of a relative movement between the cylinder 06 and the dressing 01, preferably during the rotation of the cylinder 06 in its production direction P, but also possibly just as well during a suitable movement of the dressing 01, for example during a dressing movement counter to the production direction P of the cylinder 06, the suspension leg 13 at the leading end 03 of the dressing 01 is hooked on the first edge 16 of the opening 09[\square]. A rolling element

24, which is placed against the cylinder 06, can [here] support the mounting of the dressing 01 on the cylinder 06 since[in that] the rolling element 24 rolls the dressing 01 up on the cylinder 06. A suspension leg 14 is formed, for example, at the trailing end 04 of the dressing 01, and[wherein] this trailing end suspension leg 14 is pressed into the opening 09 of the cylinder 06 in the course of rolling the dressing 01 up on the cylinder 06.

[032] A device for executing the above-described[mentioned] method will now be explained by way[means] of an example of a web-fed offset jobbing printing press with, for example, an upright rubber- against-rubber printing group in 4-cylinder construction and with a horizontal guidance of a material 46 to be imprinted, such as [preferably] a paper web 46, as depicted schematically in [(]Fig. 5[)].

In[Accordingly,] in this example, a first pair of cylinders 31, 32 is provided, which first pair of cylinders 31, 32 roll off on each other underneath the paper web 46 and consist of a forme cylinder 31 and a rubber blanket cylinder 32. A[, and a] second pair of cylinders 33, 34, which also roll off on each other, are arranged above the paper web 46 and consist of a forme cylinder 33 and a rubber blanket

cylinder 34. The[, wherein the] paper web 46 is conducted between the two rubber blanket cylinder 32, 34, which are placed against each other. Preferably several, for example five or six, separate print positions for use in the application of five or six differently colored ink₁ are provided in the printing press. In what follows₁ it is assumed for the sake of simplicity₁ and without restricting the invention, that at least the forme cylinders 31, 33 are identical in their size and in their structural type.

[033] The forme cylinder 31 can be covered with a printing forme 36, and the forme cylinder 33 can be covered with a printing forme 37, wherein the printing formes 36, 37 each have, for example, a length L corresponding to the circumference of the forme cylinders 31, 33, and each have a width B corresponding to the length of the respective barrels of the forme cylinders 31, 33. In this case₁ the printing formes 36, 37 can have, for example, in respect[relation] to their width B₁ four or six printed pages arranged axially side- by-side and, in relation to their length L₁ two printed pages circumferentially one behind the other, therefore resulting in a total of eight or twelve printed pages. As previously

discussed, and as[already] represented in Figs. 1 and 2, the printing formes 36, 37 have, on their [front]ends, in relation[relating] to their length L, beveled suspension legs 13, 14, by the use[means] of which, the printing formes 36, 37 are fastened on the respective forme cylinder 31, 33. As discussed above, these[, in that the] suspension legs 13, 14 are inserted into a slit-shaped opening 09 which is cut into the surface areas of the forme cylinders 31, 33 and extending in the axial direction of the forme cylinders 31, 33 and are held there, if required, by the use[means] of a holding device, which is preferably arranged in a channel in the forme cylinder 31, 33. The opening angle α_1 between the beveled suspension leg 13 and the extended length L of the printing forme 36, 37 at the leading end 03 of the printing formes 36, 37 is preferably 45° . At the trailing end 04 of the printing formes 36, 37, the opening angle β_1 between the beveled suspension leg 14 and the extended length L of the printing formes 36, 37 is preferably 90° . The slit width S of the opening 09 cut into the forme cylinders 31, 33 preferably is 1 mm to 3 mm.

[034] In a preferred embodiment of the printing press in accordance with the

present invention, it is provided that a change of one or of several printing formes 36, 37 on the forme cylinders 31, 33 can be made by remote control from a control console that is assigned to the printing press, while the paper web 46 is running.

In particular, a printing forme 36, 37, to which has been assigned a definite color of printing ink, for example black, should be exchangeable without it being necessary[required] to stop the whole printing process [as a whole]. To achieve this goal, [for example]a first printing forme magazine 38 which is, for example, arranged underneath the paper web 46, is provided for the forme cylinder 31, and [for the forme cylinder 33]a second printing forme magazine 39 for the forme cylinder 33 is arranged above the paper web 46. Each of the[, wherein each] printing forme magazines 38, 39 has at least one chute 41, 42 for receiving a used printing forme 36, 37 to be removed from the respective forme cylinder 31, 33, and at least one chute 43, 44 for receiving fresh printing formes 36, 37 to be mounted on the respective forme cylinder 31, 33. Once[While] the printing forme magazine 36, 39 assigned to the respective forme cylinder 31, 33 has been positioned[placed], for example by the use[means] of a pivot movement[.], against

the respective forme cylinder 31, 33 for changing a printing forme 36, 37, the first forme cylinder 31 and the second forme cylinder 33, for example, are moved away from their respective rubber blanket cylinders 32, 34, with which they are in an operative connection. Alternatively, [However, alternatively] or additionally, [to the forme cylinders 31, 33] the rubber blanket cylinders 32, 34 can be moved away from the paper web 46. In any case, during the change of one or of several of the printing formes 36, 37, the respective forme cylinder 31, 33 is disengaged from the paper web 46. In, [while in] the remainder of the printing group, the other pairs of cylinders 32, 34 can remain in production.

[035] The chutes 41, 43, or 42, 44 for receiving a used or a fresh printing forme 36, 37, respectively are each advantageously arranged parallel with each other in the respective printing forme magazines 38, 39. As, [i.e. as] a rule, they are layered or stacked on top of each other. In this case, a separating wall 84, for example, in the respective printing forme magazine 38, 39 can separate the chutes 41, 43 or 42, 44 from [form] each other, as seen in [(Fig.5)]. To make [For making] possible satisfactory access to the chutes 41, 43, or 42, 44, even when

the paper web 46 is running, for example for removing a used printing forme 36, 37 from the chutes 41, 42, or for making a fresh printing forme 36, 37 available in the chutes 43, 44, these chutes 41, 43, or 42, 44, are accessible, in relation[relating] to the running direction of the paper web 46, from a side of the printing forme magazine 38, 39 extending parallel with the paper web 46.

Preferably, the printing forme magazines 38, 39 each extend over the width of the barrels of the forme cylinders 31, 33. At[, but at] least the magazines 38, 39 extend over the width B of the printing formes 36, 37, and are preferably capable of receiving a printing forme 36, 37 completely, i.e. over their lengths L. The chutes 41, 43, or 42, 44 are preferably located in a housing. The[, wherein the] housing has an opening o38, o39, which can be aligned parallel with[in] respect to the barrel of the respective forme cylinder 31, 33, and through which opening o39, o39 a printing forme 36, 37 can be fed to the forme cylinder 31, 33, or can be inserted from the forme cylinder 31, 33[latter] into the chute 41, 43. The[For this purpose, the] openings o38, o39 of the printing forme magazines 38, 39 are brought toward the respective forme cylinders 31, 33 at a substantially[clearly]

lesser distance a_{38} , a_{39} , in relation to the respective openings 09 in the forme cylinders 31, 33, than the length L of the printing formes 36, 37. Distances a_{38} , a_{39} of between 2% and maximally 50% of the length L of the printing formes 36, 37 are advantageous. In, in particular, short distances a_{38} , a_{39} , up to 10% of the length L, are preferred. It is advantageous to support[arrange] at least the printing forme magazine 39[46] located[arranged] above the paper web 46 to be movable, so that, for example, magazine 39[it] can be moved or pivoted out of a position of rest, preferably located above the printing group, into a working position against the forme cylinder 33. By [means of]the movable arrangement of the printing forme magazine 38, 39 an improved accessibility of the printing group results. This facilitates the performance of, for example for performing] work required there, such as, for example, maintenance work.

[036] In its work position, a movably arranged printing forme magazine 38, 39 can be fixed in place adjacent to[in front of] a forme cylinder 31, 33, at its distance a_{38} , a_{39} , and in its orientation by the provision of an arrestment device 83, as seen in [(Fig. 5)]. The arrestment device or stop 83 can be provided by a conical

bolt 83, for example, which is fixed in place₁ in reference to the forme cylinder 31, 33, for example, and which conical bolt 83 enters into an opening in the housing of the printing forme magazine 38, 39. This conical bolt 23[and] centers a printing forme magazine 38, 39, which has been pivoted to the forme cylinder 31, 32, for example, with[in] respect to the barrel of the forme cylinder 31, 33 by [means of] its openings o38, o39. The[Here, the] conical bolt 83 has been preferably configured[designed] in such a way that₁ in the course of its entry into the housing of the printing forme magazine 38, 39₁ no self-locking effect will occur. Instead[, instead] an incline is only used for positioning[position] the printing forme magazine 38, 39. With[In] regard to [the]side register, it is advantageous to bring the forme cylinder 31, 32 into a predefined position₁ with[in] respect to the printing forme magazine 31, 33, for example to put it into a zero position with[in] respect to the side register, before accomplishing an exchange of a printing forme 36, 37 between the forme cylinder 31, 33 and the printing forme magazine 38, 39. Alternatively.[It] is also [alternatively]possible₁ for setting the forme cylinder 31, 33₁ to bring the printing forme magazine 38, 39 into a predefined position laterally₁

with[in] respect to the forme cylinder 31, 33, so that the exchange of a printing forme 36, 37 between the printing forme magazine 38, 39 and the forme cylinder 31, 33 can take place correctly aimed and without lateral offset. For example, [by means of this]the printing forme 38, 39 can be brought into a predefined position laterally, in relation to the forme cylinder 31, 33, so[in] that the printing forme magazine 38, 39 is placed in a lateral position free of play. This[, which] can take place wherein[in that] the printing forme magazine 38, 39 is introduced, preferably with at least a front area oriented toward the forme cylinder 31, 33, into a gap extending axially with[in] respect to the forme cylinder 31, 33. The[, wherein the] gap has lateral boundaries which are stationary with[in] respect to the frame of the printing press.

[037] Without restricting the invention by this, in what follows it is assumed that the second printing forme magazine 39, which is arranged above the paper web 46 and which can be placed against the forme cylinder 33, has two chutes 42, 44, which are arranged parallel and which are situated on top of each other, namely a lower chute 42 for receiving printing forme 37 to be removed, and an upper chute

44 for making a fresh printing forme 37 available. Both of these two chutes 42, 44 are [only slightly]spaced only slightly apart from each other in the printing forme magazine 39. The[It is preferably provided that the] printing forme 37 located in a lower chute 42 is preferably spaced apart from a printing forme 37 located in the other, upper chute 44 of the same printing forme magazine 39 by 30 to 40 mm, for example, and preferably by even less, because of which small distance of separation, a very flat structural[structure] shape of the printing forme magazine 39 is achieved, which flat, structural shape is very advantageous.

[038] To remove[For removing] a used printing forme 37, the printing forme magazine 39 is pivoted in front of the forme cylinder 33 and is fixed in place there in such a way that at least the input area of the chute 42 for receiving the used printing forme 37 is preferably directed tangentially toward the surface area of the forme cylinder 33. The forme cylinder 33 is rotated until an imaginary[imagined] tangential line T1, which rests on the slit-shaped opening 09 of the forme cylinder 33, is either aligned with the chute 42 for receiving the printing forme 37 to be removed, or at least extends parallel with this chute 42. As long as no

element[means] of the printing forme magazine 39 acts in a pushing or in a pulling manner on the printing forme 37, the rotating forme cylinder 33 alone will convey[conveys] the used printing forme 37 being removed into the printing forme cylinder 39. The entire process of the removal of a used printing forme 37 from the forme cylinder 33 can then be advantageously controlled by an electric control device, and[preferably] would preferably be remotely controlled from a control console which is assigned to the printing press.

[039] Preferably at the start of the process for the removal of a used printing forme 37 from the forme cylinder 33, or at least as soon as the trailing end 04 of the printing forme 37 has reached the opening o39[039] of the printing forme magazine 39, and in particular, if the rubber blanket cylinder 34 has been moved away from the forme cylinder 33, a rolling element 47 which, for example, can consist of a plurality of rolls arranged side-by-side in the axial direction, is placed against the forme cylinder 33 at a distance from its opening 09 in the production direction P of the forme cylinder 33. The[, so that the] printing forme 37 is thus pushed against the forme cylinder 33 not far from its trailing end 04. The holding

device in the forme cylinder 33 releases the trailing end 04 of the printing forme 37 and, because of the elasticity of the printing forme 37, this trailing end 04 springs out of the opening 09. At this time, the leading end 04 of the printing forme 37 typically[preferably] still rests, in a positively connected manner, against the front edge[end] 16 of the opening 09, which lies in front, in the production direction P.

[040] Subsequently, the forme cylinder 37 rotates counter to its production direction P until the trailing end 04 of the printing forme 37 has been introduced into the chute 42 which is provided for receiving the printing forme 37 to be removed. The trailing end 04 of the printing forme 37 is[and is] snapped in place in chute 42,[there] in a positively connected manner, onto a holding element 48, as seen in Fig. 6, preferably by a contact over the entire surface of the beveled suspension leg 14 with the holding element 48, and wherein the holding element 48 is embodied as a ratchet 48, also as seen in [(]Fig. 6[)]. Thus, the holding element 48, i.e. the ratchet 48, is hooked on the beveled suspension leg 14 at the trailing end 04 of the printing forme 37. The holding element 48 is connected with a first conveying device 49, which is assigned to the chute 42 for receiving the

printing forme 37 to be removed. This first conveying device 49 is[,] preferably a[, for example,] linear drive mechanism, for example, which is assigned to the chute 42 for receiving the printing forme 37 to be removed, and which pulls a hooked-on used printing forme 37 into the chute 42.

[041] In a preferred embodiment, the first conveying device 49 has a carriage 51, to which the holding element 48 is attached, for example pivotably by the provision[means] of a joint, as further depicted in [(]Fig. 6[)]. In the course of its rotation in a direction which is counter to its production direction P, the forme cylinder 33 pushes the trailing end 04 of the printing forme 37 to be removed into the chute 42 for receiving the printing forme 37 to be removed. The[, wherein the] suspension leg 14[04] beveled or angled off on this trailing end 04 of the printing forme 37 is pushed[shoved] against a stop 52 which, for example, is formed on the carriage 51 or is attached to carriage 51[there]. The stop 52 is positioned in the chute 42 in such a way that, because of the trailing end 04 of the printing forme 37 being pushed against the stop 52, the leading end 03 of the printing forme 37 is pushed out of the opening 09 in the forme cylinder 33.

The[Accordingly, the] stop 52 is initially arranged in the chute 42 at a distance from the opening 09 in the forme cylinder 33 such[so] that a printing forme 37 to be removed from the forme cylinder 33 is pushed, just[shortly] before its entire length L has been completely removed from the forme cylinder 33, and with its suspension leg 14 at the trailing end 04, against the stop 52. This[and] releases the suspension leg 13 at the leading end 03 of the printing forme 37, which was preferably maintained at the front edge 16 of the opening 06 by a positive connection and not by a holding element 21, from the opening 09 by [means of] a transmitted pulse or force and without utilizing or relying on the elasticity of the leading end 03 of the printing forme 37. Thus, the positively connected contact of the plate leading end suspension leg 13 is terminated by a short jolt acting along the length L of the printing forme 03.

[042] The[It can be provided that the] holding element or ratchet 48 engaged with[at] the trailing end 04 of the printing forme 37 is snapped together with the stop 52 because of the jolt. The holding element 48 can be embodied to be wedge-shaped, for example, and the tip of the wedge can be oriented toward the

opening of the chute 42, as seen in Fig. 6, so that, in the course of the conveying movement of the used printing forme 37 the trailing end 04 of the printing forme 37 initially lifts the holding element 48 against a force, such as, for example, the force of the weight of the holding element 48, or against a spring force of a spring which is operatively connected with the holding element 48, until the beveled suspension leg 14 at the trailing end 04 of the printing forme 37 extends behind the holding element 48 and grips it. The[, after which the] holding element 48 is then again lowered into its initial position. The[It can be provided that the] jolt of the trailing end 04 of the printing forme 37 against the stop 52 can trigger[s] a control signal, by the use[means] of which control signal, the carriage 51 of the first conveying device 49 is put into motion for conveying the printing forme 37 completely into the chute 42. The used printing forme 37 can thereafter be taken out of the side of the chute 42. Removal of this used printing forme 37 can be made easier because[in that] an ejector 86 is preferably provided in the printing forme magazine 39, which ejector 86[laterally] conveys the used printing forme 37 laterally sufficiently far out of the chute 42 so that the printing forme 37 can be

grasped. Reaching[, so that reaching] into the chute 42 is thus not necessary.

[043] In the meantime, the rolling element 47 which was placed against the forme cylinder 33 has been[was] moved away from the forme cylinder 33. This is done[,] preferably immediately prior to the leading end 03 of the printing forme 37 being expelled from the opening 09 in the forme cylinder 33. The rolling element 47 had been placed, non-positively connected, against the forme cylinder 33 in such a way that it aided the conveying of the used printing forme 37[33] during the rotation of the forme cylinder 33. For example, the carriage 51 of the first conveying device 49 can be guided in laterally installed rails or ball boxes. It is also advantageous to arrange a hingedly seated, and preferably pivotable guide plate 53 near the forme cylinder 33 and in front of the opening of the printing plate magazine 39, which guide plate 53 can be oriented toward the forme cylinder 33, as is shown in [(Fig. 5. By the use), by means] of this guide plate 53,[which] a trailing end 04 of the printing forme 37, which was released from the opening 09 in the forme cylinder 33, can be conducted in an accurately guided manner to the chute 42 for receiving the printing forme 37 to be released. In particular, by

use[means] of the guide plate 53, it is possible to block an erroneous access of a used printing plate 37 to be removed from the forme cylinder 33 to the chute 44, in which a fresh printing forme 37 can be held ready.

[044] In[For the] preparation for[of] the mounting of a fresh printing forme 37 on the forme cylinder 33, the printing forme 37 to be mounted is placed into the upper chute 44 of the printing forme magazine 39, preferably from a side which is easily accessible during the printing process. Thereafter, it is possible to put the mounting of the fresh printing forme 37 onto[on] the forme cylinder 33, which forme cylinder 33 must be free for this printing forme 37, i.e. unoccupied, into motion by the use[means] of an electric control which is assigned to the printing press, preferably by the use of a control console. A second conveying device 54, which is assigned to the upper chute 44 for making available the fresh printing forme 37, is put into motion, and preferably is triggered by a control signal output from the control console, [in order]to push the fresh printing forme 37 forward out of the chute 44 of the printing forme magazine 39 in the direction of the forme cylinder 33, as shown in [(]Fig. 7[)]. The second conveying device 54 can be a

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pneumatic linear drive mechanism, for example, which [in particular] is particularly advantageously configured[designed] as an inclined lifting device for a printing forme 37, and which is arranged hanging in the chute 44, as is the case in the printing forme magazine 39 arranged above the paper web 46. This, which means that the second conveying device 54 has a carriage 56, for example with a groove 57, into which groove 57 the beveled suspension leg 14 on the trailing end 04 of the fresh printing forme 37 enters, preferably in the course of placing this printing forme 37 into the chute 44 of the printing forme magazine 39. In[wherein, in] the course of pushing the printing forme 37 out of the chute 44, the carriage 56 does not move parallel with[in] respect to the printing forme 37, but instead is continuously farther removed from the printing forme 37. The[, so that the] beveled suspension leg 14 at the trailing end 04 of the fresh printing forme 37 is thus eventually released from the groove 57 while the carriage 56 conveys the printing forme 37 out of the chute 44. Thus, the conveying direction of the second conveying device 54 can form an opening angle with the printing forme 37 of less than 30°, and preferably of from 15° to 20°. This selected opening angle is then

fixed during the conveying and cannot be changed. Conveying of the printing forme 37 can be aided by a stop 58 which is formed on the carriage 56 or which is attached there. The[, wherein the] stop 58 pushes[acts pushingly] against the suspension leg 14 of the trailing end 04 of the fresh printing forme 37.

[045] The fresh printing forme 37 is pushed₁ with its leading end 03 against the forme cylinder 33, preferably tangentially, by the second conveying device 54 until the suspension leg beveled off at this leading end 03 rests on the surface area of the forme cylinder 33. While the fresh printing forme 37 is being moved out of the chute 44 in its mounting direction M, the printing forme 37 is also being conducted by a pusher 59, or at least by a lever 59, which is arranged laterally in the chute 44, which is hingedly seated, and which₁ in particular₁ is pivotable, against a one- or a multi-part, undeformable lateral stop 61, which is arranged opposite the pusher 59 or the lever 59 and which is fixed in place in the chute 44, so that the printing forme 37 is definitely aligned in its mounting direction M, and is therefore also definitely aligned in the axial direction with[in] respect to the forme cylinder 33, as seen in [(Fig. 8)]. Several pushers 59 or levers 59 can also be provided in

the chute 44, which can be particularly advantageous [in particular]in connection with printing formes 37 of great length L. The forme cylinder 33 is also advantageously put into a predefined position with[in] respect to the side register, in that it is put into a zero position with[in] respect to the side register, before the fresh printing forme 37 is applied to it. The pivot axis of the levers 59 is preferably arranged vertically in respect to the support surface 02 of the printing forme 37. Preferably, the at least one lever 59 acts intermittently laterally on the printing forme 37. The[, wherein the] placing into contact of the lever 59 occurs[takes place], for example, by the use of an actuating device[means], in particular a pneumatically operated actuating device[means], against the force of a spring. In the course of being put into contact, the lever 59 is pulsatingly deflected, so that it provides a push only over a short period of time, [but]so that the printing forme 37 can otherwise be moved unhindered in its mounting direction M, for example. Since the lever 59 only acts for a short time on the printing forme 37, the printing forme 37 can be again conveyed into the chute 44 if needed, without the lever 59 hindering a movement of the printing forme 37 counter to its mounting direction M.

The pusher 59 or lever 59 is preferably activated for the purpose of aligning the printing forme 37 at the time the printing forme 37 is conveyed out of the chute 44.

If a further stop 63 is provided₁ in the mounting direction M of the printing forme 37, the lever 59 can then press against the side of the printing forme 37 and can align it in the axial direction₁ in relation to the forme cylinder 33₁ while the printing forme 37 rests against the further stop 63. By the uses[means] of a lever 59, which is laterally deflected by a pneumatically actuated device[means] against a printing forme 37 of a width B, which width B is variable within defined tolerance limits, a force of identical size₁ regardless of the actual width measurement of the printing forme 37₁ is always placed against the printing forme 37.

[046] Even before the leading end 03 of the printing forme 37 reaches the forme cylinder 33, a rolling element 62 is placed against the forme cylinder 33, and a stop 63 is conducted close to the forme cylinder 33, as shown in [(]Fig. 8[)]. The rolling element 62 can consist of a plurality of rolls arranged side-by-side in the axial direction. The stop 63, which can also consist of a plurality of rolls arranged side-by-side in the axial direction, is arranged₁ in the mounting direction M of the

printing forme 37₁ in front of or before the rolling element 62₁ or at the side of the rolling element 62. The stop 63 has an inclined face 64 facing the forme cylinder 33, whose imaginary straight-line extension intersects the surface area of the forme cylinder 33 at an intersection point C. An imaginary[imagined] third tangent line T3 rests on the surface area of the forme cylinder 33 at the intersection point C, with which the inclined face 64, or its imaginary extension, forms an acute angle δ [delta], which is open in the direction toward the printing forme 37 conducted to the forme cylinder 33. The stop 63 can be configured[designed] as a wedge, for example, which is fixedly connected with a support for the rolling element 62. The leading end 03 of the fresh printing forme 37, being brought against the forme cylinder 33₁ comes into contact with the inclined face 64 of the stop 63, because[by means] of which₁ the printing forme 37 is aligned with[in] respect to the forme cylinder 33. The previously described lateral alignment of the printing forme 37₁ by the use[means] of the levers 59₁ can also take place only at the end of conveying the printing forme 37 out of the chute 44 if the leading end 03 of the printing forme 37 already rests against the stop 63.

[047] The leading end 03 of the fresh printing forme 37, which has been brought against the forme cylinder 33, is fed to the surface area of the forme cylinder 33 in such a way that the suspension leg 13, beveled off at the leading end 03 of the printing forme 37, is pressed against the surface area of the forme cylinder 33 and rests on it. The opening angle α_1 between the beveled suspension leg 13 and the extended length L of the printing forme 37 can be slightly reduced because of the pressure exerted by the stop 63 on the leading end 03 of the printing forme 37 in the direction of the forme cylinder 33. Since the suspension leg 13, which is beveled at an opening angle α_1 of preferably 45° at the leading end 03, has a length l13 in the range between 4 mm to 11 mm, for example, in particular in the range between 4 mm to 8 mm, and preferably of 6 mm, the leading end 03 of the printing forme 37 is located close to the surface area of the forme cylinder 33, or close to a fourth tangential line T4 resting on the forme cylinder 33 at the contact point of the suspension leg 13. The distance a37 is from 2.5 mm to 6 mm, for example. The rolling element 62, which has been placed, together with the stop 62, against the forme cylinder 33, has a radius r62, which has been selected to be

slightly larger than the measurement of the distance a37. For example, the radius r62[26] lies within the range of 5 mm to 15 mm, and preferably is at 10 mm.

[048] For mounting the printing forme 37, the forme cylinder 33 is rotated until the suspension leg 13 beveled off on the leading end 03 of the printing forme 37 can be placed on the surface area of the forme cylinder 33 at a distance a09₁ in the production direction P of the forme cylinder 03₁ behind the rear edge 16 of the opening 09. The[, wherein the] distance a09 is less than an arched segment of the length of a quarter, and in particular of one-eighth, of the circumference of the cylinder 06. The distance a09 is preferably clearly less than the length of the circumference of the rolling element 62. A preferred embodiment of the present invention provides that the suspension leg 13₁ beveled off at the leading end 03 of the printing forme 37₁ is placed at a distance a09 of between from 5 mm to 10 mm behind the opening 09.

[049] While the forme cylinder 33 continues to rotate in its production direction P, the suspension leg 13 beveled off at the leading end 03 of the printing forme 37 is hooked in the opening 09 of the forme cylinder 33, aided by a force FR directed

radially with[in] respect to the forme cylinder 33. The force FR directed radially with[in] respect to the forme cylinder 33 is correlated with the pressure with which the leading end 03 of the printing forme 37 is pressed against the forme cylinder 33. That[The] pressure is the result of a contact pressure exerted by the stop 63 and can be increased by the inherent weight FG of the printing forme 37, or in that the leading end 03 of the printing forme 37 is elastically prestressed with an effective direction against the forme cylinder 33.

[050] Different from the above described preferred[exemplary] embodiment of the printing forme magazine 39 arranged above the paper web 46, is an embodiment in which the printing forme magazine 38 is arranged underneath the paper web 46, and the printing forme 36 in the chute 43 which is used for making the fresh printing forme 36 available, over preferably between 30% and 50% of its length L_1 on a support 66, as seen in [(]Fig. 10, The[], wherein the] printing forme 36 is maintained by its inherent weight, preferably frictionally connected, on the support 66. Because of this, it is not necessary to employ external energy for use in holding the printing forme 36 on its support 66, such as, for example, by a

suction device charged with a vacuum, which fixes the printing forme 36 in place on the support 66. The support 66 can be moved by [means of]a third conveying device 67, which can be configured[designed] as a pneumatic linear drive mechanism₁ and with whose aid the fresh printing forme 36 can be pushed with its leading end 03 against the force of gravity upward, preferably tangentially with[in] respect to the forme cylinder 31. To this end, the suspension leg 14 at the trailing end 04 of the printing forme 36 preferably again rests against a stop 58, which can be applied to the support 66 or can be formed on it. If the printing forme 36 is conveyed₁ against the force of gravity₁ against the forme cylinder 31, a member_[means] corresponding to the stop 63₁ can be omitted. Thus, the third conveying device 67 is, in the same manner as the second conveying device 54, preferably configured[designed] as a translatory conveying device, which performs a displacement path.

[051] In the printing forme magazine 39 which is arranged above the paper web 46, the suspension legs 13, 14 of the printing forme 37 point upward, and the printing forme 37 can be arranged hangingly suspended in the chute 44,

because[in that] the suspension leg 14 attached to the trailing end 04 of the printing forme 37 is held on the carriage 56 of the second conveying device 54, as seen in [(Fig. 7)], while in the printing forme magazine 38 arranged underneath the paper web 46 the suspension legs 13, 14 of the printing forme 36 point downward, i.e. toward the support 65 for the printing forme 36, as seen in [(Fig. 10)].

[052] Corresponding to the preferred[exemplary] embodiment, which was described for the printing forme magazine 39 arranged above the paper web 46, a fourth conveying device 68 with a hingedly, and in particular with a pivotably seated holding element 69, such as, in particular, a ratchet, can be provided in the printing forme magazine 38, arranged underneath the paper web 46, in the chute 41 for receiving a printing forme 36 to be removed from the forme cylinder 31. The[, so that the] holding element 69 at the suspension leg 14 of the trailing end 04 of a used printing forme 39, which used printing forme 39 is wound off the cylinder 31, by [means of]the rotation of the forme cylinder 31, and which is pushed into the chute 41, is hooked and pulls it preferably completely into the

chute 41 because of the movement of the fourth conveying device 68, as seen in [(Fig. 11)].

[053] It is advantageous to provide at least one friction body 71, 72 in each of both of the printing forme magazines 38, 39 in the chutes 43, 44 for use in making available a fresh printing forme 36, 37, which friction body 71, 72, in particular during the mounting of the fresh printing formes 36, 37 on the respective cylinders 31, 33, then presses the fresh printing forme 36, 37 against a corresponding abutment 73, 74, as see in [(Fig. 12)] at least when the suspension leg 13 on the leading end 03 of the printing forme 36, 37 has been hooked on[in] the front edge 16 of the opening 09 in the forme cylinder 31, 33. The friction bodies 71, 72 and their abutments 73, 74 are preferably arranged in the chutes 43, 44 vertically with[in] respect to the conveying direction of the printing formes 36 37 so that, because of their contact pressure exerted on the printing formes 36, 37, they hold the respective printing forme 36, 37 in a defined position, such as if with cheeks, while the respective printing forme 36, 37 is pulled by the rotating forme cylinder 31, 33 onto the respective forme cylinder 31, 33. Because the fresh printing forme

36, 37 is pulled onto the respective forme cylinder 31, 33 against the contact pressure exerted by the friction bodies 71, 72 and abutments 73, 74, the printing forme 36, 37 lies more tautly on the forme cylinder 31, 33. Because[By means] of this₁ it is also assured that the printing forme 36, 37 rests₁ free of play₁ against the front edge 16 of the opening 09 of the forme cylinder 31, 33. Incidentally, the friction bodies 71, 72 can also be used for applying a bending stress to the printing forme 36, 37₁ in the manner previously described in connection with the support element 43. Thus, the friction bodies 71, 72 can take on the function of a brake or of a holding device[means] and can be of importance₁ in particular in connection with chutes 43, 44 which have been placed inclined with[in] respect to the force of gravity₁ against a forme cylinder 31, 33.

[054] In a preferred embodiment of the present invention, the friction body 71, 72 is arranged in the chutes 43, 44 in such a way that the friction body 71, 72 acts against the side of the printing forme 36, 37, which is provided with a print image. In order to prevent damage to the printing forme 36, 37₁ and to its print image₁ by the contact pressure which can be exerted by the friction body 71, 72, the friction

bodies 71, 72 have a friction surface 76, 77, which is preferably smooth and which is of lesser hardness than the surface of the printing formes 36, 37 facing the friction bodies 71, 72. The friction bodies 71, 72 preferably are made of a reversibly deformable hollow body, such as, for example, a tube which can be filled with a pressure medium, for example compressed air. The[, wherein the] tube is preferably made of an elastomeric material, such as, for example, rubber. The abutments 73, 74 can be embodied, for example, as one or as several rails made of plastic with a surface on which the bodies can preferably slide. However, the friction bodies 71, 72 can also be arranged on a conveying device, which conveys the printing formes 36, 37 in the chutes 43, 44, such as, for example, on the carriage-like support 66, and can hold at least one of the printing formes 36, 37, when needed. Thus, the friction bodies 71, 72 can also be placed against a printing forme 36, 37 which is conveyed into the chute 43, 44.

[055] In the course of being charged with a pressure medium, the friction bodies 71, 72, which are preferably embodied as hollow bodies, increase their volume and exert a surface pressure on a printing forme 36, 37 resting against them.

The[, wherein the] printing forme 36, 37 is supported₁ on the forme back₁ by one of the abutments 73, 74, that are preferably made of plastic. The intensity of the surface pressure is preferably controllable by the pressure medium. Since the elastomeric material of the friction bodies 71, 72, as well as the plastic material of the abutments 73, 74, have a lesser hardness than the printing formes 36, 37₁, which are typically made of a metallic material, and₁ in particular, are made of an aluminum alloy, damage to[of] the printing formes 36, 37 when the printing formes 36, 37 are pulled₁ under the existing surface pressure₁ out of the chute 43, 44 need not be feared.

[056] The friction bodies 71, 72₁ and their abutments 73, 74 are arranged in the chutes 43, 44 preferably near the respective openings of the chutes 43, 44. They are thus[, i.e.] close to the place where a fresh printing forme 36, 37, which is made available in the chutes 43, 44 for mounting on the forme cylinder 31, 33, leaves the respective printing forme magazine 38, 39. The friction bodies 71, 72 and their abutments 73, 74 are arranged in the chutes 43, 44, for example, parallel with[in] respect to the width B of the printing forme 36, 37. The friction

bodies 71, 72, preferably embodied as hollow bodies, can be seated in a strip 78 with a U-shaped profile, for example, in which[wherein] the U-shaped profile is preferably open at the side facing the printing forme 36, 37. The U-shaped profile laterally enclosing the hollow body₁ lends stability to the hollow body and directs its increase in volume₁ caused by its being charged with compressed air₁ purposely against the printing forme 36, 37.

[057] One embodiment of the friction bodies 71, 72 consisting of a hollow body provides, as seen in [(Fig. 13)], for the hollow body to be conducted over the width B of the printing forme 36, 37 in a channel 79 extending over the width B of the printing forme 36, 37. The[, and for the] channel 79 is configured having openings 81, 82, which openings are spaced apart from each other and which are oriented toward the printing forme 36, 37. For[, for] example₁ two such openings 81, 82₁ in particular, can be provided and through which the hollow body 71, 72 can exert a surface pressure on the printing formes 36, 37 when it is charged with a pressure medium. If the friction bodies 71, 72 are embodied as hollow bodies extending preferably over the entire width B of the printing forme 36, 37 it is

assured that, when the hollow bodies are charged with a pressure medium, a uniform surface pressure₁ preferably over the entire width B of the printing forme 36, 37₁ results.

[058] The surface pressure exerted by the friction body 71, 72 is released by exhausting, in particular by emptying₁ the friction bodies 71, 72, which are embodied as hollow bodies₁ by suction, because of which exhausting₁ the volume of the hollow bodies is reduced before the suspension leg 14₁ arranged at the trailing end 04 of the printing forme 36, 37₁ passes the place of surface pressure in the course of moving the printing forme 36, 37 out of the chute 43, 44.

Therefore₁ the surface pressure only acts for a short time.

[059] Furthermore, further guide elements for accomplishing a dependable, and in particular₁ a slightly braked transport and a support of the printing forme 36, 37₁ free of play to a large extent₁ can be provided in the chutes 41 to 44 on those sides of the chutes which face the surface of the printing forme 36, 37. Brush arrangements are particularly suitable for this use, which brush arrangements do not[no] damage the sensitive surfaces of the printing formes 36, 37.

[060] It is also advantageous₁ for providing as simple and unhindered mobility as possible of the printing forme magazines 38, 39₁ to configure[design] the printing forme magazines 38, 39 in such a way that only a single connecting element is provided on each such printing forme magazine 38, 39, which single connecting elements combines all of the required connecting lines in a bundle for providing the printing forme magazine 38, 39 with electrical and other energy, depending on the units installed in them, as well as for performing the exchange of control signals. Alternatively to the above-described₁ preferably pneumatic drive mechanisms of the conveying devices 49, 54, 67 and 68, as well as other units, electric drive mechanisms and an electric control can also be provided for these devices and units.

[061] While preferred embodiments of a method and device for mounting dressings onto the cylinder of a printing press, in accordance with the present invention, have been set forth fully and completely hereinabove, it will be apparent to one of skill in the art that various changes in, for example, the sizes of the cylinders, the source of the pressurized fluid, and the like could be made without

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[PCT/DE2003/002634]

departing from the true spirit and scope of the present invention, which is
accordingly to be limited only by the appended claims.

WHAT IS CLAIMED IS:

[List of Reference Symbols

01	Dressing, printing forme
02	Support surface (01)
03	End, leading (01)
04	End, trailing (01)
05	-
06	Cylinder
07	Surface area (06)
08	Channel
09	Opening (06)
10	-
11	Bending edge (13)
12	Bending edge (14)
13	Suspension leg
14	Suspension leg
15	-
16	Edge, front, first (09)
17	Edge, rear, second (09)
18	Wall
19	Wall
20	-
21	Holding means
22	Spring element
23	Actuating means
24	Support element, rolling element
25	-
26	Edge
27	Contact line, contact point
28	Positional fixation
29	Contact point
30	-]

- [31 Cylinder, forme cylinder, first
- 32 Cylinder, rubber blanket cylinder, first
- 33 Cylinder, forme cylinder, second
- 34 Cylinder, rubber blanket cylinder, second
- 35 -
- 36 Printing forme
- 37 Printing forme
- 38 Printing forme magazine
- 39 Printing forme magazine
- 40 -
- 41 Chute
- 42 Chute
- 43 Chute
- 44 Chute to
- 45 -
- 46 Material to be imprinted, paper web
- 47 Rolling element
- 48 Holding element, ratchet
- 49 Conveying device, first
- 50 -
- 51 Carriage
- 52 Stop
- 53 Guide plate
- 54 Conveying device, second
- 55 -
- 56 Carriage
- 57 Groove
- 58 Slider, lever
- 60 -
- 61 Stop
- 62 Rolling element
- 63 Stop]

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- [64 Inclination of the stop (63)
- 65 -
- 66 Support
- 67 Conveying device, third
- 68 Conveying device, fourth
- 69 Holding element, ratchet
- 70 -
- 71 Friction body
- 72 Friction body
- 73 Abutment
- 74 Abutment
- 75 -
- 76 Friction surface (71)
- 77 Friction surface (72)
- 78 Strip
- 79 Channel
- 80 -
- 81 Opening (79)
- 82 Opening (79)
- 83 Arrestment, conical bolt
- 84 Separating wall
- 85 -
- 86 Ejector

- FR Radial force
- FG Force of weight
- MR Restoring moment

- B Width
- C Intersection point
- D Thickness of the material
- L Length]

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[PCT/DE2003/002634]

[M Mounting direction

P Production direction

S Slit width

T1 Tangent line, first

T2 Tangent line, second

T3 Tangent line, third

T4 Tangent line, fourth

l13 Length

l14 Length

a09 Distance

a37 Distance

a38 Distance

a39 Distance

o38 Opening

o39 Opening

r62 Radius

$\alpha 1$ Opening angle

$\alpha 2$ Opening angle

$\beta 1$ Opening angle

$\beta 2$ Opening angle

gamma Opening angle

delta Opening angle]